Support for Remote Access to On-Line Subsets of EOSDIS HDF Datasets

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Objectives

- **Efficient access to remote on-line HDF datasets**
  - » Allow remote subsetting, sampling, browsing of HDF files without transferring large volumes of data over the network.
- **Support for existing HDF science applications and information infrastructure**
  - » By relinking with DODS versions of HDF libraries, existing HDF applications become network clients which can access remote data in multiple standard formats stored on World Wide Web servers.
- **Interoperability between multiple standard data format**
  - » JPL prototype will add HDF support to DODS.
  - » With the JPL contribution, DODS will provide automatic translation between HDF, netCDF and JGOFS formats

What is DODS?

- DODS is a **D**istributed **O**ceans **D**ata **S**ystem in which --
  - » Existing or new science analysis programs are transformed into network clients which can access datasets remotely
  - » DODS provides replacement versions of HDF, netCDF or JGOFS libraries with which applications can be relinked.
  - » The replacement libraries handle network access and data format translation automatically. Remote files appear as if they were local and in the format the application understands.
  - » With DODS the domain of the typical science application is expanded from the local computer file system to the set of science WWW servers on the Internet.
  - » Scientists have direct control over data access via their applications; no unwieldy and restrictive “retrieval system” is interposed between the data and the data analysis software.

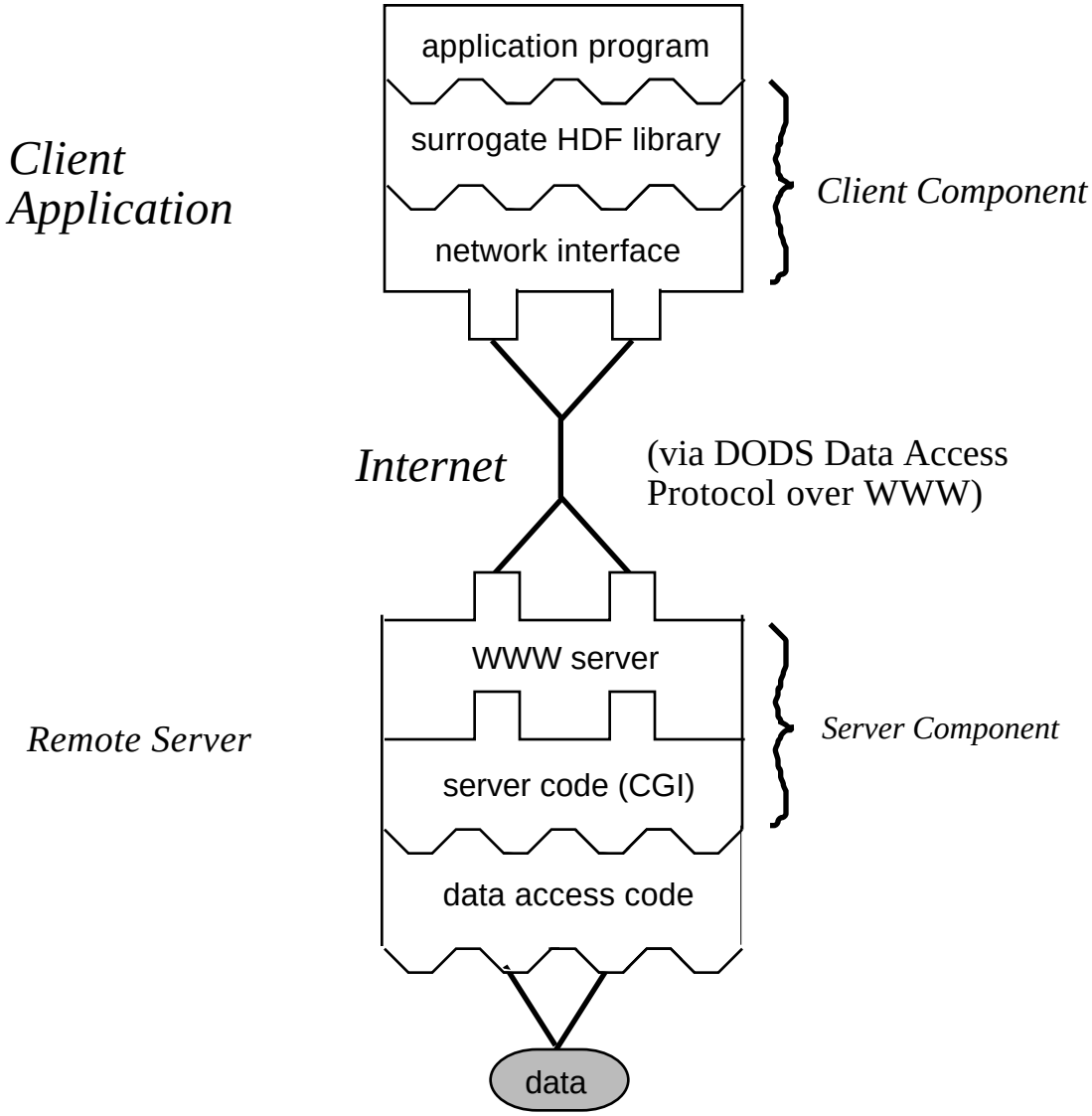
What is DODS? (cont.)

- **Science data are exported to the Internet via WWW (httpd) servers**
  - » Data providers need only install a few DODS CGI programs at their Web site
- **Data format interoperability is provided via the DODS Data Access Protocol (DAP)**
  - » Client data requests are encoded into URL's and transmitted via HTTP to the WWW server.
  - » Data returned are translated on the server side from the native format into the DAP and sent to the client; the client interprets the data encoded in the DAP and returns them in the form expected by the application.
  - » Because the DAP is used as the intermediate data format, translation between any of the DODS-supported data formats is possible.

JPL Approach

- **Develop DODS HDF Server software**
  - » convert URL-encoded data and metadata requests into HDF API calls on data residing on server
  - » translate HDF API return values into DODS Access Protocol structures and send to client.
- **Develop DODS surrogate HDF API library**
  - » convert client application HDF API calls into URL-encoded requests for data from server.
  - » translate DODS Access Protocol responses into return values from client application HDF calls.
- **Evaluate and demonstrate prototype using EOSDIS software and AVHRR Oceans Pathfinder dataset**
  - » relink EOSView application with DODS surrogate HDF libraries to permit remote browsing of AVHRR Oceans Pathfinder dataset.
  - » look at other potential EOSDIS client software for use with DODS

Architecture



JPL TIMELINE

Preliminary Activities **10/01/95 - 11/10/95**

setting up development H/W and S/W

learning about DODS, HDF, C++, WWW technology

***** *time out for surgery, recuperation, holidays* *****

HDF Server Development **01/02/96 - 04/30/96**

design, code, test, doc

Client Libraries Development **05/01/96 - 08/31/96**

design, code, test, doc

Documentation **09/01/96 - 09/15/96**

DODS HDF Server Admin Guide

DODS Client Library Users' Guide

Testing and Preparation **09/16/96 - 12/31/96**

testing with HDF data

demonstrations to ESDIS and DODS